

DOCKET: OPT110010000

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: Zhou Yang et al.) PRIOR
EXAMINER: Wesley D. Markham
)
SERIAL NO.: Divisional Application of) PRIOR ART
U.S. Serial No. 09/656,982) UNIT: 1762
)
FILING DATE:) DATE: January 29, 2002
)
FOR: OPTICAL LENS)
COATING APPARATUS)

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
BOX PATENT APPLICATION
Washington, D.C. 20231

Dear Sir:

Applicants respectfully submit the following preliminary amendment for entry in the above-identified Divisional application of pending application serial number 09/656,982.

In the Claims

Please cancel Claims 1-9.

In the Title

Please delete the title and replace it with the following title:

-- OPTICAL LENS COATING APPARATUS AND METHOD -- .

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In the Abstract

Please delete the Abstract and replace it with the following Abstract:

A method and apparatus are provided for batch, continuous, or semi-continuous coating of optical lenses. The method and apparatus use a plurality of carriages which are reciprocally moved in the apparatus to transfer jigs from a jig filled carriage to a lens loading arm and to load the jigs with lenses and then to transfer the jigs now containing uncoated lenses to a leading empty carriage. Using such a reciprocating motion, a leading empty carriage is now filled with jigs containing uncoated lenses and the uncoated lenses in the carriage may then be coated by dipping the carriage in a coating tank. After coating, the coated lenses are removed from the system. A similar reciprocating motion is used in the coated lens unloading section.

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In the Specification

Please delete the paragraph beginning at page 19, line 21 and replace it with the following paragraph:

When the empty carriage is filled as indicated in step 160, the empty carriage is now a filled jig and uncoated lens carriage and the filled jig carriage is now an empty carriage as shown in step 180. The filled jig and uncoated lens carriage is then moved from the uncoated lens carriage loading section in step 190 to the coating storage section (R) and the process in the uncoated lens carriage loading system to load more lens into the apparatus continued at step 110.

Please delete the paragraph beginning at page 20, line 4 and replace it with the following paragraph:

Referring now to Fig. 3B, the filled jigs and uncoated lens carriage is moved from R to step 200 and the lenses coated by, e.g., dipping the carriage in a coating tank. This forms a filled jig and coated lens carriage. The filled jig and coated lens carriage is then moved to the coated lens unloading arm with a leading empty carriage in step 210. Jigs and secured coated lenses therein are removed from the filled jig and coated lens carriage in step 220 and the coated lenses removed from the jigs and the coated lenses removed from the system in step 230. The filled jig and coated lens carriage is moved back positioning the leading empty carriage at coated lens unloading arm in step 240. The jigs are loaded from the arm onto the empty carriage in step 250. In step 260 it is determined whether the empty carriage is filled. If it is not filled, the filled jig and coated lens carriage is moved to the coated lens unloading arm in step 270 and the process continues in step 220. If the empty carriage is filled, the empty

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carriage is now a filled carriage and the jig and coated lens carriage is now an empty carriage as shown in step 280. The filled jig carriage is moved to the filled jig carriage section in step 290 (B). The filled jig carriage as shown in Fig. 3S may now be used as shown in Fig. 3A in step 110 for unloading of jigs from the filled jig carriage to secure lenses for loading into a leading empty carriage. Referring back to Fig. 3B, in step 290 the apparatus is ready to remove lenses from a new filled jig and coated lens carriage as shown starting in step 210 and the process repeated until all the lens desired are coated and unloaded.

Please delete the paragraph beginning at page 21, line 3 and replace it with the following paragraph:

Referring now to Fig. 4 a carriage used in the invention is shown. The carriage structure shown generally as 25 comprises two support arms 26, which are shown in an L shape, to support a cross-arm 27. The cross-arm 27 has a plurality of vertical hangers 28 ending in another second cross-arm 29. Extending outward, preferably transversely, from second cross-arm 29 are a plurality of jig holding arms 30. Six jig arms are shown as 30a-30f. The jig arms 30a-30f will support and hold a plurality of jigs as shown hereinbelow. The jigs, depending on the position of the carriage 25 in the apparatus, will be empty (not contain lenses) or will contain lenses secured in the jigs. As can be seen from Fig. 4, the jig arms 30a-30f extend outward from the second cross-arm 29 and are sized to fit a number of jigs on each arm in an abutting front-to-back relationship. Also, since there are a plurality of jig arms 30a-30f, the jigs are also positioned on the carriage 25 in a side-by-side relationship. Depending on the length of the jig arms 30a-30f and the size of the jig as discussed hereinbelow, will determine

how many jigs can be held by each carriage. The jig arms 30a-30f will generally be in a rod shape so that a jig having a communicating sleeve will fit over the jig arm and slide thereon. The carriage 25 will be used with any suitable conveyor system to support the carriage 25 and to move the carriage through the apparatus as described hereinabove.

Please delete the paragraph beginning at page 21, line 21 and replace it with the following paragraph:

Referring now to Fig. 5A a jig used in the invention is shown. The jig shown generally as 31 comprises a sleeve 32, preferably cylindrical, having a through opening 32a. The jig sleeve 32 and through opening 32a are used to slide over the jig arms 30a-30f as shown in Fig. 4 and also over the unloading/loading arm as described hereinbelow. The jig has a vertical plate 33 extending from the bottom of the sleeve and a connected second vertical plate 34 in an L shape wherein the leg bottom 37 of the L extends in the same plane as the sleeve 32. The leg 37 at the bottom of plate 34 is serrated 38 for securely holding the lens 35 in the jig as shown in Fig. 5B. Attached to vertical plate 33 is a U-shaped spring 44 which is used to hold or secure the lenses with the extending leg 37 and serrated edges 38. The U-shaped spring 44 comprises outwardly extending opposed angled spaced arms 39a and 39b, vertical legs 40a and 40b and transversely extending arms 41a and 41b each terminating in inward transverse arms 42a and 42b with the free ends thereof being pointed as shown at 43a and 43b. Fig. 5B shows the U-shaped spring being spread apart and holding an uncoated lens 35 in the jig by a spring action.

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Please delete the paragraph beginning at page 22, line 14 and replace it with the following paragraph:

Referring back to Fig. 4 in conjunction with Figs. 5A and 5B, in operation the sleeve 32 of jig 31 would fit and slide over the jig arms 30a-30f of carriage 25. The length of sleeve 32 and the length of jig arms 30a-30f will determine the number of jigs which can be held on each jig arm 30a-30f. Typically there will be about 6 to 8 jigs held on each arm. As shown in Fig. 4, there are 6 jig arms 30a-30f which means that if the carriage 25 is full, a total of 36 jigs can be carried on carriage 25 (six deep by six across). As discussed above, jig pushing mechanisms are used in conjunction with the unloading and loading arm of the apparatus to push the jig onto or off the jig arms 30a-30f onto or off the loading/unloading arm depending on the operation. This will be described further hereinbelow. The jigs are loaded onto the jig arms 30a-30f so that the jigs are in an abutting relationship.

Please delete the paragraph beginning at page 23, line 9 and replace it with the following paragraph:

In Fig. 6A, filled jig carriage 21a is completely full with jigs 31 in side-by-side and front-to-back relationship and is in position adjacent vertically positioned uncoated lens loading arm 12. The uncoated lens loading arm 12 is in an upright position and the arms 50a-50f of uncoated lens loading arm 12 are adjacent and in the same plane as the arms 30a-30f of carriage 21a. At this position pusher 12a moves toward carriage 21a and pushes the jigs 31 from the respective jig arms 30a-30f onto the jig arms 50a-50f of uncoated lens loading arm 12. Only one row of jigs is transferred to the loading

arm because the arms 50a-50f of the loading arm are configured to accept only one row.

Please delete the paragraph beginning at page 23, line 18 and replace it with the following paragraph:

Also as shown in Fig. 6A, conveyor 13 has thereon a number of uncoated lenses 35 which are spaced to communicate with the arms 50a-50f of loading arm 12 and jigs 31. Jig spacer prongs 51 are used in conjunction with a turning mechanism 52 to communicate with the arms of jigs 31 to either open the arm of the jigs to accommodate an uncoated lens or to release pressure on the jig arms so that the lens will be secured by the tension of the jig arms. Empty carriage 22a is shown to the left of filled jig carriage 21a. Empty carriage 22a likewise has carriage arms 30a-30f which are to be used to receive jigs and uncoated lenses secured in the jigs. A pusher 12b is shown which is used to push jigs containing uncoated lenses onto the carriage arms 30a-30f of empty carriage 22a from loading arm 12 as described hereinbelow.

Please delete the paragraph beginning at page 24, line 9 and replace it with the following paragraph:

Referring now to Fig. 6C, uncoated lens loading arm 12 is moved completely downward (typically 90°) so that the jigs secured on the loading arms 50a-50f are in position to receive lenses 35. At this point, turning mechanism 52 is activated to open the jig spacer prongs 51 so that the arms of the jigs 31 are spread apart. The lenses are then pushed by lens pusher 53 into position and turning mechanism 52 deactivated to release the pressure on the jig spacer prongs so as to close the jig spacer prongs

securing the lenses in each of the respective jigs 31. As can also be seen from Fig. 6C, filled jig carriage 21a is moved to the right and empty carriage 22a likewise moved to the right to be in position adjacent loading arm 12 when it is moved upward.

Please delete the paragraph beginning at page 24, line 19 and replace it with the following paragraph:

Referring now to Fig. 6D, loading arm 12 is moved upward so that it is now adjacent jig arms 30a-30f of empty carriage 22a. Arms 50a-50f of loading arm 12 are also adjacent arms 30a-30f of empty carriage 22a and in the same plane as arms 30a-30f. Jig pusher 12b is then actuated to push the jigs containing uncoated lenses from loading arms 50a-50f onto arms 30a-30f of empty carriage 22a.

Please delete the paragraph beginning at page 25, line 22 and replace it with the following paragraph:

Referring now to Fig. 7, an unloading or loading arm of the invention is shown generally as 45. It should be appreciated that the unloading arm and loading arm are essentially the same with their function being to transfer jigs with or without lenses from one carriage to another carriage. The unloading/loading arm comprises a horizontal cross-member 46 having two transverse members 47 and two vertical members 48. The vertical members 48 terminate in pivot members 49 which are used to move (rotate) the arm from one position to another position. For example, the arm in the vertical position will be used to either remove jigs from a carriage or transfer jigs to a carriage and in the downward (horizontal) position the arm is used to secure uncoated lenses or to remove coated lenses from jigs. A swinging motion is used to

perform these functions through pivot point 49. Extending transversely from horizontal cross-arm 46 are jig arms shown generally as 50. There are 6 jig arms shown numbered 50a-50f. As described hereinabove, these jig arms are used in conjunction with the jig arms (30a-30f) of the carriage to transfer jigs from the loading/unloading arm to a carriage or vice versa.

Please delete the paragraph beginning at page 26, line 15 and replace it with the following paragraph:

The length of the jig arms 50a-50f is essentially the same length as the sleeve 32 of the jig shown in Fig. 5A. Thus, when a jig is removed from a carriage onto the unloading/loading arm 45 the jig sleeve 32 will fit over jig arm 50. Thus, only one jig is able to be positioned on each jig arm of the loading/unloading arm. Once the jigs are positioned on jig arms 50a-50f, depending on the operation, the jig arm is moved downward to either the uncoated lens loading conveyor or the coated lens unloading conveyor. For example, if we view the operation of loading an uncoated lens into the system, the jig filled carriage will be positioned opposite the loading arm 45 and a front row of jigs pushed from jig arms 30a-30f to corresponding jig arms 50a-50f of the loading arm. Once the jigs are positioned on jig arms 50a-50f, the loading arm is moved downward to the lens conveyor 13 as shown Figs. 6A-6F to secure lenses 35 in each jig on the jig arms 50a-50f of loading arm 45. Once the lenses 35 are secured in the jigs, the loading arm 45 is moved back to a vertical position and the carriages moved back positioning the empty carriage now opposite loading arm 45. Jig pusher 12b then pushes the jigs now containing secured uncoated lenses from loading arm 45 jig arms 50a-50f onto their corresponding jig arms 30a-30f of carriage 25. The

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carriages are then moved forward and another set of empty jigs positioned onto jig arms 50a-50f of loading arm 45 from the jig arms of a jig filled carriage. The procedure is repeated until all the jigs are removed from the jig filled carriage, lenses secured in the jigs and the jig containing lenses transferred to the empty carriage.

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REMARKS

The present amendment is prepared in accordance with the new requirements of 37 C.F.R. § 1.121. The clean copy of the **claims, replacement paragraphs of the specification and the abstract is provided above.** The marked-up copy of the **claims, replacement paragraphs of the specification and the abstract** is attached on separate sheets. In the marked-up version, inserted material is underlined and deleted material has a line therethrough.

The foregoing preliminary amendment (which is being mailed simultaneously with a request for filing a divisional application of pending application serial number 09/656,982) is submitted as noted above to define more specifically the invention described in this divisional application. The claims pending in this divisional application are 10 and 11.

No new matter has been added.

Respectfully submitted,



John J. Tomaszewski
Reg. No. 26,241


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(203) 787-0595

Certification Under 37 CFR 1.10

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, BOX PATENT APPLICATION, Washington, D.C. 20231.

Name: Carol M. Thomas

Date January 29, 2002

Signature: 

opt100010000PAMD

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Claims 1-9 have been canceled.

In the Title

The title was deleted and replaced with the following title:

-- OPTICAL LENS COATING APPARATUS AND METHOD -- .

In the Abstract

The Abstract was deleted and replaced with the following Abstract:

A method and apparatus are provided for batch, continuous, or semi-continuous coating of optical lenses. The method and apparatus use a plurality of carriages which are reciprocally moved in the apparatus to transfer jigs from a jig filled carriage to a lens loading arm and to load the jigs with lenses and then to transfer the jigs now containing uncoated lenses to a leading empty carriage. Using such a reciprocating motion, a leading empty carriage is now filled with jigs containing uncoated lenses and the uncoated lenses in the carriage may then be coated by dipping the carriage in a coating tank. After coating, the coated lenses are removed from the carriage and the coated lenses removed from the system. A similar reciprocating motion is used in the coated lens unloading section to transfer the coated lenses held in the jigs from the carriage to an empty carriage, which empty carriage then becomes a jig filled carriage which can

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be used in sequence in the system to secure further uncoated lenses and the process continued.

In the Specification

The paragraph beginning at page 19, line 21 was deleted and replaced with the following paragraph:

When the empty carriage is filled as indicated in step 160, the empty carriage is now a filled jig and uncoated lens carriage and the filled jig carriage is now an empty carriage as shown in step 180. The filled jig and uncoated lens carriage is then moved from the uncoated lens carriage loading section in step 190 to the coating storage section ~~(A)~~(R) and the process in the uncoated lens carriage loading system to load more lens into the apparatus continued at step 110.

The paragraph beginning at page 20, line 4 was deleted and replaced with the following paragraph:

Referring now to Fig. 3B, the filled jigs and uncoated lens carriage is moved from AR to step 200 and the lenses coated by, e.g., dipping the carriage in a coating tank. This forms a filled jig and coated lens carriage. The filled jig and coated lens carriage is then moved to the coated lens unloading arm with a leading empty carriage in step 210. Jigs and secured coated lenses therein are removed from the filled jig and coated lens carriage in step 220 and the coated lenses removed from the jigs and the coated lenses removed from the system in step 230. The filled jig and coated lens carriage is moved back positioning the leading empty carriage at coated lens unloading arm in step 240. The jigs are loaded from the arm onto the empty carriage in step 250.

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In step 260 it is determined whether the empty carriage is filled. If it is not filled, the filled jig and coated lens carriage is moved to the coated lens unloading arm in step 270 and the process continues in step 220. If the empty carriage is filled, the empty carriage is now a filled carriage and the jig and coated lens carriage is now an empty carriage as shown in step 280. The filled jig carriage is moved to the filled jig carriage section in step 290 (B). The filled jig carriage as shown in Fig. 3B-3S may now be used as shown in Fig. 3A in step 110 for unloading of jigs from the filled jig carriage to secure lenses for loading into a leading empty carriage. Referring back to Fig. 3B, in step 290 the apparatus is ready to remove lenses from a new filled jig and coated lens carriage as shown starting in step 210 and the process repeated until all the lens desired are coated and unloaded.

The paragraph beginning at page 21, line 3 was deleted and replaced with the following paragraph:

Referring now to Fig. 4 a carriage used in the invention is shown. The carriage structure shown generally as 25 comprises two support arms 26, which are shown in an L shape, to support a cross-arm 27. The cross-arm 27 has a plurality of vertical hangers 28 ending in another second cross-arm 29. Extending outward, preferably transversely, from second cross-arm 29 are a plurality of jig holding arms 30. Six jig arms are shown as 30a-30ef. The jig arms 30a-30ef will support and hold a plurality of jigs as shown hereinbelow. The jigs, depending on the position of the carriage 25 in the apparatus, will be empty (not contain lenses) or will contain lenses secured in the jigs. As can be seen from Fig. 4, the jig arms 30a-30ef extend outward from the second cross-arm 29 and are sized to fit a number of jigs on each arm in an abutting front-to-back

relationship. Also, since there are a plurality of jig arms 30a-30ef, the jigs are also positioned on the carriage 25 in a side-by-side relationship. Depending on the length of the jig arms 30a-30ef and the size of the jig as discussed hereinbelow, will determine how many jigs can be held by each carriage. The jig arms 30a-30ef will generally be in a rod shape so that a jig having a communicating sleeve will fit over the jig arm and slide thereon. The carriage 25 will be used with any suitable conveyor system to support the carriage 25 and to move the carriage through the apparatus as described hereinabove.

The paragraph beginning at page 21, line 21 was deleted and replaced with the following paragraph:

Referring now to Fig. 5A a jig used in the invention is shown. The jig shown generally as 31 comprises a sleeve 32, preferably cylindrical, having a through opening 32a. The jig sleeve 32 and through opening 32a are used to slide over the jig arms 30a-30ef as shown in Fig. 4 and also over the unloading/loading arm as described hereinbelow. The jig has a vertical plate 33 extending from the bottom of the sleeve and a connected second vertical plate 34 in an L shape wherein the leg bottom 37 of the L extends in the same plane as the sleeve 32. The leg 37 at the bottom of plate 34 is serrated 38 for securely holding the lens 35 in the jig as shown in Fig. 5B. Attached to vertical plate 33 is a U-shaped spring 44 which is used to hold or secure the lenses with the extending leg 37 and serrated edges 38. The U-shaped spring 44 comprises outwardly extending opposed angled spaced arms 39a and 39b, vertical legs 40a and 40b and transversely extending arms 41a and 41b each terminating in inward transverse arms 42a and 42b with the free ends thereof being pointed as shown at 43a

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and 43b. Fig. 5B shows the U-shaped spring being spread apart and holding an uncoated lens 35 in the jig by a spring action.

The paragraph beginning at page 22, line 14 was deleted and replaced with the following paragraph:

Referring back to Fig. 4 in conjunction with Figs. 5A and 5B, in operation the sleeve 32 of jig 31 would fit and slide over the jig arms 30a-30ef of carriage 25. The length of sleeve 32 and the length of jig arms 30a-30ef will determine the number of jigs which can be held on each jig arm 30a-30ef. Typically there will be about 6 to 8 jigs held on each arm. As shown in Fig. 4, there are 6 jig arms 30a-30ef which means that if the carriage 25 is full, a total of 36 jigs can be carried on carriage 25 (six deep by six across). As discussed above, jig pushing mechanisms are used in conjunction with the unloading and loading arm of the apparatus to push the jig onto or off the jig arms 30a-30ef onto or off the loading/unloading arm depending on the operation. This will be described further hereinbelow. The jigs are loaded onto the jig arms 30a-30ef so that the jigs are in an abutting relationship.

The paragraph beginning at page 23, line 9 was deleted and replace with the following paragraph:

In Fig. 6A, filled jig carriage 21a is completely full with jigs 31 in side-by-side and front-to-back relationship and is in position adjacent vertically positioned uncoated lens loading arm 12. The uncoated lens loading arm 12 is in an upright position and the arms 50a-50ef of uncoated lens loading arm 12 are adjacent and in the same plane as the arms 30a-30ef of carriage 21a. At this position pusher 12a moves toward

carriage 21a and pushes the jigs 31 from the respective jig arms 30a-30ef onto the jig arms 50a-50ef of uncoated lens loading arm 12. Only one row of jigs is transferred to the loading arm because the arms 50a-50ef of the loading arm are configured to accept only one row.

The paragraph beginning at page 23, line 18 was deleted and replaced with the following paragraph:

Also as shown in Fig. 6A, conveyor 13 has thereon a number of uncoated lenses 35 which are spaced to communicate with the arms 50a-50ef of loading arm 12 and jigs 31. Jig spacer prongs 51 are used in conjunction with a turning mechanism 52 to communicate with the arms of jigs 31 to either open the arm of the jigs to accommodate an uncoated lens or to release pressure on the jig arms so that the lens will be secured by the tension of the jig arms. Empty carriage 22a is shown to the left of filled jig carriage 21a. Empty carriage 22a likewise has carriage arms 30a-30ef which are to be used to receive jigs and uncoated lenses secured in the jigs. A pusher 12b is shown which is used to push jigs containing uncoated lenses onto the carriage arms 30a-30ef of empty carriage 22a from loading arm 12 as described hereinbelow.

The paragraph beginning at page 24, line 9 was deleted and replaced with the following paragraph:

Referring now to Fig. 6C, uncoated lens loading arm 12 is moved completely downward (typically 90°) so that the jigs secured on the loading arms 50a-50ef are in position to receive lenses 35. At this point, turning mechanism 52 is activated to open the jig spacer prongs 51 so that the arms of the jigs 31 are spread apart. The lenses are

then pushed by lens pusher 53 into position and turning mechanism 52 deactivated to release the pressure on the jig spacer prongs so as to close the jig spacer prongs securing the lenses in each of the respective jigs 31. As can also be seen from Fig. 6C, filled jig carriage 21a is moved to the right and empty carriage 22a likewise moved to the right to be in position adjacent loading arm 12 when it is moved upward.

The paragraph beginning at page 24, line 19 was deleted and replaced with the following paragraph:

Referring now to Fig. 6D, loading arm 12 is moved upward so that it is now adjacent jig arms 30a-30ef of empty carriage 22a. Arms 50a-50ef of loading arm 12 are also adjacent arms 30a-30ef of empty carriage 22a and in the same plane as arms 30a-30ef. Jig pusher 12b is then actuated to push the jigs containing uncoated lenses from loading arms 50a-50ef onto arms 30a-30ef of empty carriage 22a.

The paragraph beginning at page 25, line 22 was deleted and replaced with the following paragraph:

Referring now to Fig. 7, an unloading or loading arm of the invention is shown generally as 45. It should be appreciated that the unloading arm and loading arm are essentially the same with their function being to transfer jigs with or without lenses from one carriage to another carriage. The unloading/loading arm comprises a horizontal cross-member 46 having two transverse members 47 and two vertical members 48. The vertical members 48 terminate in pivot members 49 which are used to move (rotate) the arm from one position to another position. For example, the arm in the vertical position will be used to either remove jigs from a carriage or transfer jigs

to a carriage and in the downward (horizontal) position the arm is used to secure uncoated lenses or to remove coated lenses from jigs. A swinging motion is used to perform these functions through pivot point 49. Extending transversely from horizontal cross-arm 46 are jig arms shown generally as 50. There are 6 jig arms shown numbered 50a-50ef. As described hereinabove, these jig arms are used in conjunction with the jig arms (30a-30fe) of the carriage to transfer jigs from the loading/unloading arm to a carriage or vice versa.

The paragraph beginning at page 26, line 15 was deleted and replaced with the following paragraph:

The length of the jig arms 50a-50ef is essentially the same length as the sleeve 32 of the jig shown in Fig. 5A. Thus, when a jig is removed from a carriage onto the unloading/loading arm 45 the jig sleeve 32 will fit over jig arm 50. Thus, only one jig is able to be positioned on each jig arm of the loading/unloading arm. Once the jigs are positioned on jig arms 50a-50ef, depending on the operation, the jig arm is moved downward to either the uncoated lens loading conveyor or the coated lens unloading conveyor. For example, if we view the operation of loading an uncoated lens into the system, the jig filled carriage will be positioned opposite the loading arm 45 and a front row of jigs pushed from jig arms 30a-30ef to corresponding jig arms 50a-50ef of the loading arm. Once the jigs are positioned on jig arms 50a-50ef, the loading arm is moved downward to the lens conveyor 13 as shown Figs. 6A-6F to secure lenses 35 in each jig on the jig arms 50a-50ef of loading arm 45. Once the lenses 35 are secured in the jigs, the loading arm 45 is moved back to a vertical position and the carriages moved back positioning the empty carriage now opposite loading arm 45. Jig pusher

12b then pushes the jigs now containing secured uncoated lenses from loading arm 45 jig arms 50a-50ef onto their corresponding jig arms 30a-30ef of carriage 25. The carriages are then moved forward and another set of empty jigs positioned onto jig arms 50a-50ef of loading arm 45 from the jig arms of a jig filled carriage. The procedure is repeated until all the jigs are removed from the jig filled carriage, lenses secured in the jigs and the jig containing lenses transferred to the empty carriage.